National Institute of Environmental Health Sciences

Potential for chemical mixture exposures and health risks in New Orleans Post-Hurricane Katrina

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Abstract:

Toxic chemical exposure following Hurricane Katrina was a major concern given the industrial base of the New Orleans area. We evaluated the potential for chemical mixture exposures in the USEPA's hurricane response sampling in Orleans Parish and identified health effects of concern for mixtures observed. Environmental sampling (excluding hazardous waste sites and spills) yielded 165 floodwater sampling locations, 206 soil sampling locations, and 451 sediment sampling locations. Frequently reported chemicals included manufacturing intermediates, metallic elements, and polycyclic aromatic hydrocarbons. Health effects associated with chemicals frequently reported included: blood effects, cancer, cardiovascular, gastrointestinal, kidney, liver and neurological effects. Effect-specific mixtures of two or more chemicals were found at many sampling locations. For example, two carcinogens frequently reported in soil were found together at 64 (31%) soil sample locations; seven nephrotoxicants were found together at 112 (25%) sediment sample locations; three neurotoxic chemicals were found together in 230 (51%) sediment sample locations. Hurricane response sampling showed effect-specific chemical mixtures at many locations indicating opportunity for mixture exposures. Chemicals found together are not unique to New Orleans or to post-hurricane conditions. The results highlight the limitations of single substance risk assessments and have important implications for disaster preparedness and response and surveillance. © 2009 Taylor & Francis Group, LLC.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Policymaker

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Other Exposure

Extreme Weather Event: Hurricanes/Cyclones

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Cancer, Cardiovascular Effect, Injury, Neurological Effect, Urologic Effect

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content